REVISION C

Manage SMA Process Verification Reviews

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Date

DOCUMENT HISTORY LOG

Status (Draft/ Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		January 13, 2000	
Revision	A	April 14, 2000	Editorial corrections to Sections 1 and 2, Section 3.3 definition, Section 4 References, (new numbers) 4.7 through 4.11 and Step 6.01, Deleted Section 4 Reference 4.8, Modified Steps 6.03, 6.04 and 6.05, Appendix A step 4, and modified Appendix B.
	B	October 31, 2003	Rewrote Sections 5, 6, and 7 to reflect Process Verification version 2.0. Added customer list and customer feedback to section 5. Several definitions (Sections 1 and 3) and references (Section 4) were deleted.
	C	March 31, 2004	Editorial and organizational changes to all sections.

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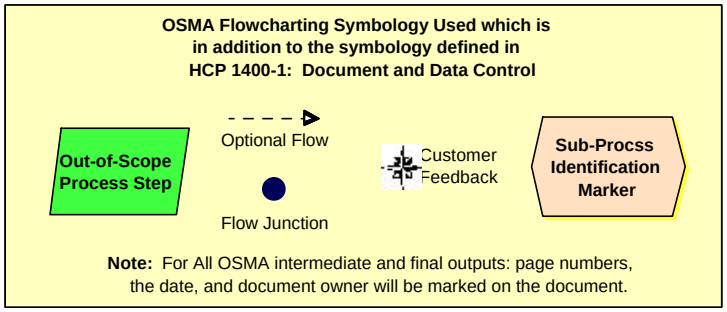
OSMA Staff Member Responsible for this HOWI: QV/Steve Newman

Customers for this HOWI: Internal: AA/SMA
External: Enterprise AA & Center SMA Directors



1. Purpose

The purpose of this Office of Safety and Mission Assurance (OSMA) Headquarters Office Work Instruction (HOWI) is to document the process for conducting Process Verifications (PV) version 2.0. This HOWI also specifies the Quality Records associated with the process.

This document describes the PV methodology by which both Center and Headquarters management are supplied with an evaluation of a Safety and Mission Assurance (SMA) organization with regard to:

A) Overall effectiveness and efficiency of the management of the SMA function,

B) Assurance of compliance with NASA policies and directives (including Federal regulations),

C) Conformance of Center SMA organization with its processes as defined in the Annual Operating Agreement (AOA),

D) Effectiveness in meeting customers' SMA requirements to support NASA Enterprise objectives, programs, and projects as agreed to in SMA Enterprise Agreements (References 4.5 – 4.8),

E) Appropriate level and quality of resources, and

F) Identification of issues and concerns that may inhibit the effective implementation of SMA functions.

(Appendix A provides a further expansion of this listing)

Reports documenting the results of PV reviews are provided to the appropriate Enterprise Associate Administrator (AA), the Center Director, the Center SMA Director, and the AA/SMA. These results are also shared with the other Center SMA directors and, when appropriate, other Enterprise AAs.

2. Scope and Applicability

PV reviews are structured around NASA's SMA requirements (listed on the SMA Documentation Tree and stored in the NASA Online Directives Information System [NODIS]), the SMA Requirements Model, and each Center's AOA. The reviews focus on SMA management processes, identifying strengths of the SMA organization and any areas that need improvement in order to accomplish the goals of the organization; i.e., areas where additional resources and increased attention may be needed. PV reviews compare the SMA functions with those documented within the AOA, and identify any issues to be addressed during follow-on reviews. This HOWI is applicable to OSMA staff members responsible for managing and conducting PVs and other NASA personnel involved in the conduct of PVs.

3. Definitions

3.1. AA: Associate Administrator

3.2. AA/SMA: Associate Administrator for Safety and Mission Assurance

3.3. AOA: Annual Operating Agreement. A Center-to-Enterprise Document which defines the SMA support that a Center will provide.

3.4. ASAP: Aerospace Safety Advisory Panel

3.5. CATS II: Corrective Action Tracking System II

3.6. Code QE: Enterprise Safety and Mission Assurance Division

3.7. Code QS: Safety and Assurance Requirements Division

3.8. Code QV: Review and Assessment Division

3.9. Effectiveness: A measure of the ability of the process output to satisfy the customer's requirements or to provide customer satisfaction.

3.10. Efficiency: A measure of the use of resources. An efficient process minimizes the use of resources in meeting the customer requirements.

3.11. HATS: NASA Headquarters Action Tracking System

3.12. IAOP: Intercenter Aircraft Operations Panel

3.13. OEP: Operations and Engineering Panel

3.14. OSMA PV Manager: OSMA staff member managing the PV program.

3.15. OSMA Center POC: OSMA staff member who is the POC for the Center undergoing PV.

3.16. OSMA Enterprise POC: OSMA staff member who is the POC for the Enterprise who oversees the Center undergoing PV.

3.17. POC: Point of Contact

3.18. PV: Process Verification

3.19. PV Team Chair: The person designated to chair the PV. Will normally be the Code QV Director.

3.20. PV Executive Secretary: The person designated to lead the on-site administrative support to the PV Team. Will normally be the Code QV Secretary.

3.21. PV Team: The support personnel from Headquarters and NASA Centers or outside specialists performing the PV.

3.22. SMA: Safety and Mission Assurance.

3.23. SMA Key Process: A process defined by the SMA Requirements Model as key to performance of SMA.

3.24. SMARTS-PVM: SMA Requirements Tracking System – PV Manager (Internet)

3.25. SMARTS-OMA: SMARTS On-Site Manager Application (PC, used by the PV Executive Secretary)

3.26. SMARTS-RA: SMARTS Reviewer Application (PC, used by the PV Team Member Reviewers)

3.27. SME: Subject Matter Expert

4. Reference Documents

The documents listed in this section are used as reference materials for performing the processes covered by the Quality Management System (QMS). Since all NASA Headquarters Level 1 (QMS Manual) and Level 2 (Headquarters Common Processes) documents are applicable to the QMS, they need not be listed in this section unless specifically referenced in this OSMA HOWI.

4.1. NPD 8700.1: NASA Policy for Safety and Mission Success

4.2. Office of Safety and Mission Assurance Functional Leadership Plan

4.3. The Annual Operating Agreements for each NASA Center

4.4. Safety and Mission Assurance Agreement for the Space Flight Enterprise

4.5. Safety and Mission Assurance Agreement for the Space Science Enterprise

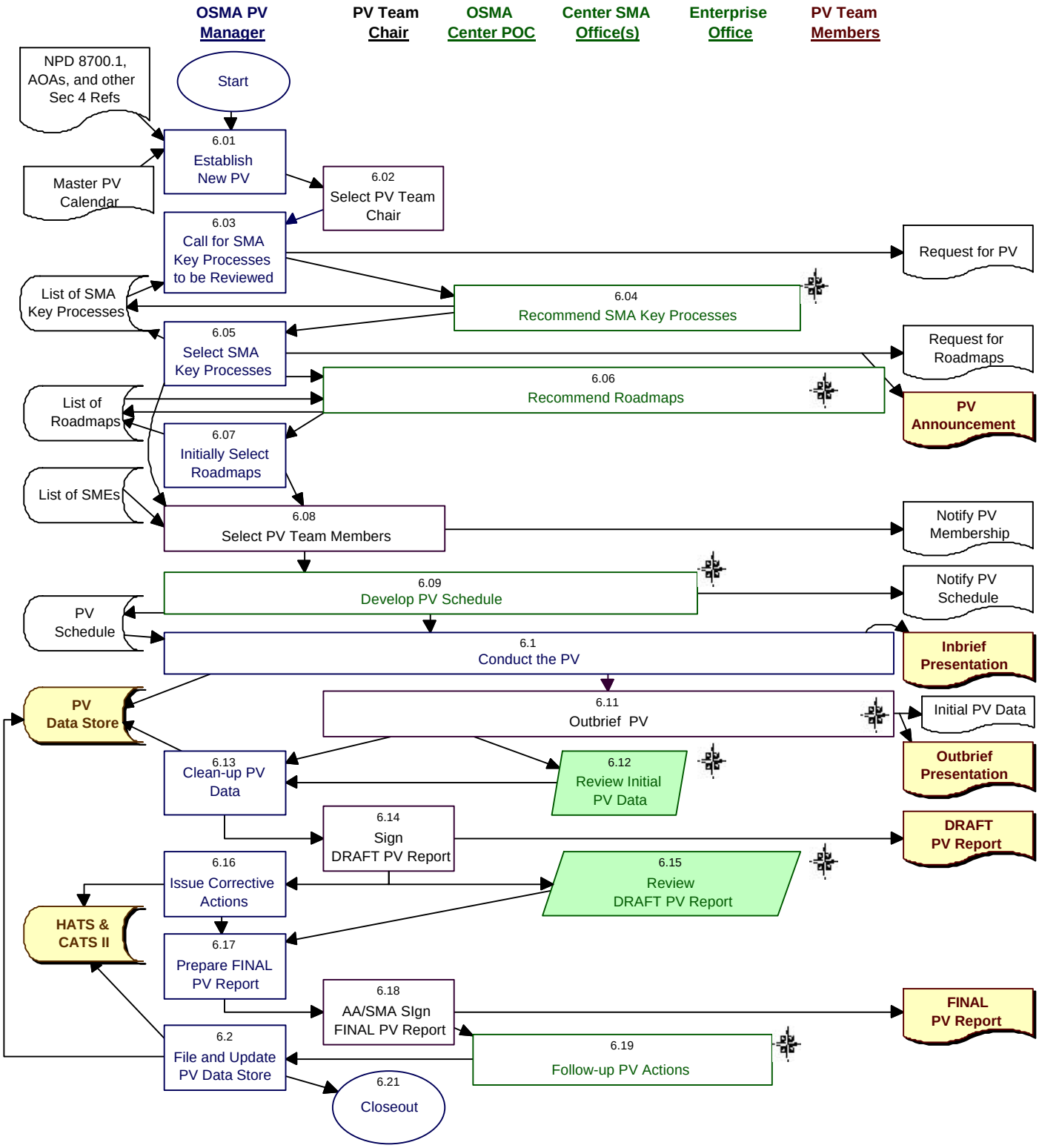
4.6. Safety and Mission Assurance Agreement for the Mission to Planet Earth Enterprise

4.7. Safety and Mission Assurance Agreement for the Aeronautics Enterprise

4.8. Safety and Mission Assurance Agreement for the Biological and Physical Research Enterprise

4.9. HOWI 1450-Q027: Manage OSMA use of HATS

5. Flowchart


OSMA PV Manager
PV Team Chair
OSMA Center POC
Center SMA Office(s)
Enterprise Office
PV Team Members
NPD 8700.1, AOAs, and other Sec 4 Refs
Start
6.01 Establish New PV
Master PV Calendar
6.02 Select PV Team Chair
6.03 Call for SMA Key Processes to be Reviewed
Request for PV
List of SMA Key Processes
6.04 Recommend SMA Key Processes
6.05 Select SMA Key Processes
Request for Roadmaps
6.06 Recommend Roadmaps
List of Roadmaps
PV Announcement
6.07 Initially Select Roadmaps
List of SMEs
6.08 Select PV Team Members
Notify PV Membership
6.09 Develop PV Schedule
Notify PV Schedule
PV Schedule
6.1 Conduct the PV
Inbrief Presentation
PV Data Store
6.11 Outbrief PV
Initial PV Data
6.13 Clean-up PV Data
6.12 Review Initial PV Data
Outbrief Presentation
6.14 Sign DRAFT PV Report
DRAFT PV Report
6.16 Issue Corrective Actions
6.15 Review DRAFT PV Report
HATS & CATS II
6.17 Prepare FINAL PV Report
6.18 AA/SMA SIgn FINAL PV Report
FINAL PV Report
6.2 File and Update PV Data Store
6.19 Follow-up PV Actions
6.21 Closeout

6. Procedure

Note: With the implementation of the SMA Requirements Tracking System (SMARTS) to track Process Verification (PV) data, many of the steps done in this HOWI are performed on-line on the SMARTS. Those actions are described with each step below.

Note: For this HOWI, the term "**Center**" means the organization being reviewed. PVs may be done on NASA Headquarters Codes, NASA Centers, NASA Facilities, or NASA Programs/Projects.

6.01 OSMA PV Manager Establish New PV:

The OSMA PV Manager determines that a PV needs to be conducted at a NASA Center/Site or at NASA Headquarters. PV reviews are nominally done to cover organizations on a 2-year cycle. However, the need/request for a PV can come from the AA/SMA, Enterprise AA, Center Director, or Center SMA Director. The SMA PV calendar will be used as guidance for when PVs are nominally scheduled.

SMARTS-PV Manager (SMARTS-PVM) Action: The OSMA PV Manager initiates a new PV in the SMARTS-PVM.

Timing: This step should be completed more than 2 months prior to the PV.

6.02 Director, Code QV Select PV Team Chair:

The Director, Code QV, will select and designate a Chair for the PV Team. Nominally, this will be the Director, Code QV; however, this function may be delegated to other NASA Civil Service SMA personnel with the consent of the AA/SMA. Additionally, the applicable OSMA Center POC serves as a PV Team Member and assists with Center arrangements and PV coordination.

SMARTS-PVM Action: The OSMA PV Manager notes the appointments as the first PV Team Members of the PV.

Timing: This step should be completed a minimum of 2 months prior to the PV.

6.03 OSMA PV Manager Call for SMA Key Processes to be Reviewed:

The OSMA PV Manager will make an initial selection of SMA Key Processes from the SMA Requirements Model to be included in the PV. Process pre-selection will be based on history and trends from prior PVs, concerns and issues with the Center from recent/past events/results, and to support data collection of SMA requirements compliance/conformance. Additionally, the OSMA PV Manager will review the recent findings and observations of the Operations Engineering Panel (OEP), Intercenter Aircraft Operations Panel (IAOP), and other SMA review mechanisms to identify areas from those related reviews that could be supported by the upcoming PV.

The OSMA PV Manager discusses the need for selection of the SMA Requirements Model Key Processes with the OSMA Center POC, OSMA Enterprise POC, and the Center SMA Director. The OSMA PV Manager grants these individuals with access to the SMARTS-PVM, with write permission to recommend SMA Key Processes to be included the PV. The OSMA PV Manager notes in the SMARTS the SMA Key Processes that have been pre-selected (i.e., mandatory) for the PV by OSMA management.

SMARTS-PVM Action: (1) Enter permissions for PV for OSMA Center POC(s), Center SMA Director, and a POC from the Center SMA Organization for the PV. (2) Indicate in the SMARTS those SMA Key Processes which are pre-selected for this PV.

Timing: This step should be completed 2 months prior to the PV.

6.04 OSMA Center POC, Center SMA Director/POC, and OSMA Enterprise POC: Recommend SMA Key Processes:

Each of the above participants selects the SMA Key Processes that should be reviewed at the PV.

SMARTS-PVM Action: The participants enter their selections in the SMARTS-PVM.

Timing: This step should be completed 6-8 weeks prior to the PV.

6.05 OSMA PV Manager Select SMA Key Processes:

The OSMA PV Manager will query OSMA management and other key OSMA personnel to help identify other topics to be included in the PV.

The OSMA PV Manager combines the recommended/suggested SMA Key Processes to be reviewed into a consolidated listing. This listing is considered final for the PV, however, it may be updated as the PV planning process continues. The selection is noted in the SMARTS-PVM.

A letter to the head of the organization being reviewed (e.g.; Center Director) is prepared and sent. An example of the letter is contained in Appendix B.

Based on SMA Key Processes identified, the OSMA PV Manager accesses the SMARTS-PVM and makes an initial selection of Roadmaps to be included in the PV. This is a combination of the Roadmaps which are linked to the selected SMA Key Processes in the SMARTS-PVM as well as other Roadmaps individually selected by the OSMA PV Manager. Those Roadmaps which are pre-selected for the PV by OSMA management will be marked as such. Roadmap pre-selection will be based on history and trends from prior PVs, concerns and issues with the Center from recent/past events/results, and to support data collection. The personnel associated with the PV are notified by the SMARTS-PVM.

SMARTS-PVM Action: OSMA PV Manager makes selection of SMA Key Processes and initial listing of the Roadmaps to be used for the PV.

Timing: 4-6 weeks prior to the PV, the letter should be sent no less than 1 month prior to the PV.

6.06 OSMA Center POC, Center SMA Director & POC, and OSMA Enterprise POC Recommend Roadmaps:

Each of the above participants selects the Roadmaps that need to be reviewed at the PV. Other topics suggested for review at the PV are in SMARTS-PVM and forwarded to the OSMA PV Manager verbally or via e-mail. The OSMA PV Manager updates the SMARTS with the recommendations. Additionally, the OSMA PV Manager researches past PVs (and other PV-like reviews such as OEP, IAOP, ASAP) to include any action items which are applicable to that Center which either are open or should be verified as closed.

SMARTS-PVM Action: OSMA PV Manager indicates desired roadmaps. Center SMA and Enterprise POCs note recommendations in SMARTS-PVM.

Timing: This step should be completed 3-4 weeks prior to the PV.

6.07 OSMA PV Manager Initially Select Roadmaps:

The OSMA PV Manager combines the recommended Roadmaps to be reviewed into a consolidated listing. This listing is considered final for the PV, however, it may be updated as the PV planning process continues. The selection is noted in the SMARTS-PVM.

SMARTS-PVM Action: OSMA PV Manager makes selection of Roadmaps for the PV.

Timing: 3 weeks prior to the PV.

6.08 OSMA PV Manager and PV Team Chair Select PV Team Members:

Based on the SMA Key Processes being reviewed and the initial listing of Roadmaps to be reviewed, a team is selected to perform the PV. Each person is contacted via automatic e-mail message from the SMARTS-PVM to ensure availability and agreement to participate. OSMA management and supervisors of non-OSMA personnel are informed of the selection for the PV via e-mail. The Code QV Division Secretary is notified to begin processing travel orders. The SMARTS-PVM is updated.

The OSMA PV Manager makes an initial assignment of Roadmaps to PV Team Members.

SMARTS-PVM Action: OSMA PV Manager notes the selection of PV Team Members for the PV and initial assignments.

Timing: 3 weeks prior to the PV.

6.09 OSMA PV Manager and Center SMA PV POC (primarily) Develop PV Schedule:

The OSMA PV Manager verifies with each PV Team Member the days that they are available for the PV. The SMARTS-PVM is updated with that information.

The Center SMA PV POC enters a schedule for interviews in the SMARTS-PVM.

Immediately prior to the PV, the OSMA PV Manager downloads the schedule and forwards it to the PV Team Members noting the Roadmaps that they will be reviewing.

SMARTS-PVM Action: SMARTS-PVM is updated.

Timing: Must be completed before the PV can begin.

NOTE: When the OSMA PV Manager or PV Executive Secretary downloads the PV data to the SMARTS-On-Site Manager Application (SMARTS-OSM), the internet-based SMARTS is locked for that PV. All changes to that PV must now be made to the SMARTS-OMA until the OSMA PV Manager has uploaded the SMARTS-OMA data back into the internet-based SMARTS-PVM in step 6.13.

6.10 PV Team Members & Center SMA Office Conduct the PV:

Approximately a week prior to the start of the PV, the PV Chair and the OSMA PV Manager will call a meeting of the PV Team. At this meeting, the following topics will be discussed:

- ✓ Topical areas to be covered during the PV,
- ✓ OSMA concerns with the performance of SMA at the Center,
- ✓ Results of past PVs at that Center and systemic findings across all PVs,
- ✓ Conduct of the PV and PV Chair directions/assignments,
- ✓ Roadmap assignments/reassignments,
- ✓ PV logistics, and
- ✓ Training needed for the PV Team Members on auditing and SMARTS-OSM, and SMARTS-RA usage.

Prior to the start of the PV, the OSMA PV Manager or the PV Executive Secretary will download the data for the PV from the Internet-based SMARTS-PVM to the portable SMARTS-OSM. Additionally, the OSMA PV Manager will ensure that a final set of Roadmap worksheets and proposed schedule are provided to all PV Team Members prior to departing from duty stations for the PV.

In general, the review begins on Monday morning and finishes on Friday afternoon. The length of the PV will depend on the organization being reviewed and the availability of personnel to support the PV.

NOTE: The nominal PV is contiguous and is 1 week long; however, PVs do not have to be a full week or contiguous. The term 'week' is used below to represent the PV visit timeframe.

The PV week begins with three meetings, each chaired/led by the PV Team Chair:

1. PV Team Only to discuss the issues to be concentrated on during the PV interviews and other activities at the facility. This closed-door meeting is to discuss how the PV Team will function for the PV. At this meeting, the PV Team Executive Secretary will pass out paper and electronic copies of the Roadmaps assigned to each PV Team Member. The electronic copies will be from the SMARTS-Review Application (SMARTS-RA). A brief training session will nominally be held after this meeting on the use of SMARTS-RA for those who need it. (Nominally this meeting is held Monday afternoon.)
2. PV Team with SMA management to discuss the schedule and arrangements for the PV. During this meeting, the PV schedule is reviewed and adjusted. The changes are entered in the SMARTS-OSM. Nominally this meeting is held on Monday afternoon.
3. In-briefing with the Center Director. This meeting has an overview presentation by the Center on their facility, functions, and key personnel. The PV Team Chair presents a presentation on the PV background and approach for the PV and introduces the PV Team Members. The PV Team Chair's presentation is retained as a quality record. The briefing will be a part of the PV draft report and the Final Report. Nominally this meeting is held on Tuesday morning. Appendix C shows a sample of an In-Briefing.

During the week, the PV Team Members will meet individually with Center personnel to discuss the PV Roadmaps. The interviews may be combined to best suit the nature of the topics being discussed. After interviews, the PV Team Members will update the Roadmaps with their findings. The Reviewer can either make an electronic update to the SMARTS-RA or pen-and-ink update to the paper copies. Daily (or when available), the reviewers will forward the updated paper copies and the electronic SMARTS-RA files to the PV Team Executive Secretary for updating in the master SMARTS-OMA record.

The updated Roadmaps are edited and printed for the PV Team Chair review/approval. The reviewed PV Roadmaps are returned to the PV Executive Secretary for updating the SMARTS-OMA.

During the week, the following meetings will be held:

1. After each day's reviews, the PV Team meets and discusses the day's findings. This meeting is open to PV Team Members only. During the meeting, the PV Team Chair will query each PV Team Member on their concerns, observations, and findings. Additionally, each proposed/postulated corrective action and nomination for SMA best practice will be discussed. The PV Executive Secretary will keep informal notes on the topics discussed during the meeting to ensure that they are followed up on later in the week and resolved in the PV Roadmap worksheets.

2. After the PV Team Members' Meeting, the PV Team will meet with the Center's SMA management to discuss a synopsis of findings and observations from Roadmap interviews; needs of the PV Team; and thoughts on possible corrective actions and SMA best practice nominations that may be made at the close of the PV.

3. After the final day of the reviews during the PV, the PV Team Members will meet to begin work on the out-brief presentation. During this meeting, issues, concerns, findings, proposed corrective actions, and nominations for SMA best practices will be discussed. The PV Executive Secretary will keep informal notes on the topics discussed during the meeting to ensure that they are resolved in the PV Roadmap worksheets. Should issues not be resolved during the meeting, the PV Chair will make assignment(s) to personnel to draft their positions (a.k.a.: minority report) for use in the final report. As PV Team Members have completed their issues, the PV Chair may release PV Team Members from the meeting. The outcome of the meeting is the initial version of the out-briefing. The PV Team Chair and the PV Executive Secretary will complete the out-briefing after the meeting. The completed out-briefing will be forwarded to the OSMA management for review and comment.

4. Pre out-briefing meeting. The PV Team Members and the lead Center SMA management will have a final opportunity to review the out-briefing. Each PV Team Member will be asked for their concurrence on the out-briefing and on the completed Roadmap worksheets. The PV Team Chair will assign presenters to sections of the briefing. Minority/dissenting opinions on the PV findings and comments will be scheduled to discuss their opinions during the out-briefing.

6.11 PV Team Chair Out-Brief PV:

At the end of the week, an out-briefing is held with the Center Director, AA/SMA, Enterprise AA, and other Center/SMA/Agency management. Nominally, the briefing is done at the facility with others participating via teleconference from NASA Headquarters. The briefing will cover the findings from the week and briefly describe the actions needed after the PV. Appendix D shows a sample out-briefing.

At the conclusion of the out-briefing, the Center SMA Director is left with: 1) a copy of the out-briefing material, 2) a copy of all PV Roadmaps reviewed, and 3) a first draft of the Action Items being assigned as a result of the PV.

6.12 ** *Out-of Scope*** Center PV POC Review Initial PV Data:

The Organization that was reviewed is invited to review the data given to them at the out-briefing and provide comments, corrections, and supporting material to OSMA. Comments and corrections are returned to the OSMA PV Manager.

SMARTS Action: none

Timing: Should be completed by 3-4 weeks after the PV.

6.13 OSMA PV Manager Clean-up PV Data:

After the PV is complete, the OSMA PV Manager uploads the SMARTS-OMA data to the internet-based SMARTS-PVM. The SMARTS-PVM will set permissions for updating to allow the Center to update the action items but not the Roadmaps or results.

The data in the SMARTS-PVM are reviewed for completeness, grammar, and adequacy. The SMARTS data is updated to reflect the corrections and changes. If comments are received from the Center by 4 weeks after the PV, they are included in the draft PV Report.

The OSMA PV Manager has the supporting material from the PV scanned and stored electronically.

PV Team Members who had dissenting opinions during the PV will be tasked to prepare write-ups on their “minority” opinions. The OSMA PV Manager and the PV Chair will incorporate these write-ups into the draft PV Report.

The OSMA PV Manager creates the draft PV Report and forwards it to the PV Team Chair and the Director of Code QV for review, approval, and signature. Simultaneously, copies of the draft PV Report will be sent to the PV Team Members. PV Team Members will be invited to review and comment on the draft PV report. The OSMA PV Manager will incorporate these comments into the draft (if received in time) and the final PV Report versions.

Copies of the report are sent to the PV Chair, OSMA Enterprise POC, OSMA Center POC, and the Center SMA Director. Appendix E contains a sample of the front matter of the PV Report.

SMARTS Action: Print out the sections of the PV Report.

Timing: Draft PV Report should be assembled and forwarded for review by 3 weeks after the PV. The Draft PV Report should be signed and sent to the Center by 4 weeks after the PV.

6.14 PV Team Chair and Code QV Director Sign DRAFT PV Report

The DRAFT PV Report is reviewed. After signature, the DRAFT PV Report is forwarded to the Center Director and the Enterprise POC with a request for comments. The DRAFT PV Report is a quality record.

SMARTS Action: none

Timing: 30 days after the end of the PV.

6.15 ** *Out-of Scope*** Center PV POC Review DRAFT PV Report:

The Organization that was reviewed is asked to review the DRAFT PV Report and provide comments to OSMA within about 3 weeks. Comments, corrections, and supporting material should be sent to the OSMA PV Manager.

SMARTS Action: none

Timing: Comments should be returned by about 6 weeks after the PV.

6.16 OSMA PV Manager Issue Corrective Actions:

After the DRAFT PV Report has been issued, the corrective actions identified during the PV are logged into various action tracking systems:

1. Center and OSMA PV Actions – Entered into the SMARTS-PVM. A person is assigned to each one for closeout. The OSMA PV Manager and the OSMA Center POC will follow-up on actions to ensure that they are worked in a timely manner.
2. OSMA PV Actions – Entered into Headquarters Action Tracking System (HATS) per HOWI 1450-Q027. The OSMA PV Manager will follow up on these actions to ensure that they are worked in a timely manner.
3. Center Corrective Actions – Each Center Corrective Action which may need OSMA involvement is assigned an OSMA support person. The Center and the OSMA staff member are notified via e-mail of their involvement.
4. Actions for organizations outside of OSMA at Headquarters and cross organization actions – These actions are entered into HATS per HOWI 1450-Q027 as a pointer to the Corrective Action Tracking System II (CATS II) where the actions are stored/tracked.

6.17 OSMA PV Manager Prepare Final PV Report:

After the comments have been received from the reviewed Center on the draft PV Report, the SMARTS is updated and a Final PV Report is prepared. Appendix E shows sample lead pages from a PV Final Report.

SMARTS-PVM Action: Update data and print out the sections of the PV Report.

Timing: Should be completed by 8 weeks after the PV.

6.18 AA/SMA Sign the Final PV Report:

The Final PV Report is reviewed per standard OSMA correspondence review procedures. After signature, the PV Report is forwarded to the Center Director and the Enterprise AA. The PV Report is stored on paper and on compact disk as a quality record.

SMARTS-PVM Action: none

Timing: Comments should be returned by about 6 weeks after the PV with the report signed about 8 weeks after the PV.

6.19 Various within OSMA and the Center Follow-up PV Actions:

The assigned actions are worked and the SMARTS-PVM is updated to reflect the current status and results.

At SMA Director's meetings, the OSMA PV Manager will normally brief on the status of all open PV actions.

6.20 OSMA PV Manager File and Update PV Data Store:

When the SMARTS-PVM has been updated for the PV and all quality records filed, the PV is complete.

6.21 Code QV Director Closeout

PV is closed.

7. Quality Records

Record ID	Owner	Location	Media Electronic /hardcopy	Schedule Number & Item Number	Retention & Disposition
PV Announcement	OSMA Corres Control	OSMA Chron File	Hardcopy	Schedule: 1 Item: 22	Retire to FRC 5 years after PV completed in 5 year blocks, then retire to NARA when 10 years old (Final Report contains copy of Letter)
In-brief Presentation	OSMA PV Manager	QV Files	Hardcopy	Schedule: 1 Item: 7.A	Retire to FRC 2 years after PV completion then transfer to NARA 10 years after PV (Final Report contains copy of Presentation)
Out-brief Presentation	OSMA PV Manager	QV Files	Hardcopy	Schedule: 1 Item: 7.A	Retire to FRC 2 years after PV completion then transfer to NARA 10 years after PV (Final Report contains copy of Presentation)
DRAFT PV Report	OSMA PV Manager	QV Files	Hardcopy	Schedule: 5 Item: 30.B	Close file at end of PV, keep Until Reference Value Ceases or 9 years at a minimum, then destroy
Final PV Report	OSMA PV Manager	QV Files	Hardcopy and electronic (on CD)	Schedule: 5 Item: 30.B	Close file at end of PV, keep Until Reference Value Ceases or 9 years at a minimum, then destroy

Appendix A: Specific Considerations for Conducting Process Verifications (PV)

The OSMA PV Manager and PV Team Members need to:

- Involve all interested and involved OSMA personnel in periodic PV policy and procedures meetings.
- Schedule PV dates at least 6 months ahead of time.
- Provide for early and frequent involvement of applicable OSMA personnel, including group input to the decision(s) on what will be reviewed on a particular PV.
- Facilitate having the right people, with the right expertise, on the PV team.
- Review Center SMA program against (but not be limited to) their AOA.
- Allow enough time for a PV so that an adequate job can be done; if additional time is needed by part of the PV team then additional time/resources should be scheduled.
- Assess safety awareness at Centers.
- Ensure that Center SMA program supports Agencywide SMA initiatives; e.g., Agency Safety Initiative, risk management.
- Ensure that Center SMA personnel are receiving appropriate training and professional development.
- Facilitate the identification of Center SMA organization resource shortfalls.
- Review Center SMA metrics for content and to determine that they exist and are used.
- Include PV Team Chair’s review and acceptance/rejection of every finding sheet developed during a PV; this review should ensure that findings are in-scope.
- Tell the Centers all of the areas that were reviewed and found to be OK.
- Provide advocacy for Center SMA director, as appropriate.
- Involve the AA/SMA and/or Deputy AA/SMA in the Center out-briefings (in person or by teleconference or ViTS).
- Provide for early OSMA editorial review of PV reports.
- Include as much parallel processing of draft PV reports in OSMA as feasible.
- Provide written report back to Center within 30 days from first day back in office from a PV review.
- Integrate PV reports on an Enterprise basis to be presented to the appropriate Enterprise annually.
- Serve as one part of a gap analysis for Enterprise AAs (AOA provides another part).

Appendix B: Sample PV Announcement Letter

QV

TO: Langley Research Center
Attn: 106/Director

FROM: Q/Associate Administrator for Safety and Mission Assurance

SUBJECT: Safety and Mission Assurance (SMA) Process Verification (PV) Review

A team from NASA Headquarters, Office of Safety and Mission Assurance (OSMA), will conduct a PV review at LaRC during October 27-31, 2003. This review will assess the overall effectiveness and efficiency of selected SMA functions at LaRC. The OSMA conducts such assessments at all NASA Centers. The focus of this assessment will be:

1. SMA management, leadership, and commitment
2. SMA processes for program oversight/insight

To derive the greatest benefit from this review, we need Alan Phillips, Director, SMA Office, and his staff to coordinate the onsite activities and agenda items. The PV team will review processes defined in LaRC's FY 2003 Annual Operating Agreement (AOA) and also may verify compliance with other SMA requirements.

Thank you for your support of this important activity that contributes to the continuing safety and success of NASA's missions.

Bryan O'Connor

cc:
Q/J. Lloyd
QE/P. Rutledge
QS/W. Harkins
QS/J. Lyver
R/V. Lebacqz
LaRC/421/A. Phillips

bcc:
Q/Chron

Appendix C: Sample In-Briefing

Mission Success Starts With Safety

NASA Ames Research Center Process Verification (PV) In-Briefing

July 29, 2003

Pete Rutledge
John Lyver

Mission Success Starts With Safety

ARC PV In-Brief Topics to be Presented

- Background, History, & Concepts
- SMA Requirements Model
- Conducting the PV Review
- Topical Areas to be reviewed

ARC PV (2)

Mission Success Starts With Safety

PV History

- PVs grew out of 1990's "Functional Management Reviews"
- 1996: First PV
- Sept 2001: Last PV (KSC) [JSC was 7/01]
- Dec 2001: PV v2.0 evolution began
- Jan 2002: PV v2.0 concept briefed to SMA Directors
- June 2002: Work began on SMA Requirements Model
- July 2002: PV v2.0 status briefed to SMA Directors
- Sept 2002: SMA Requirements Database Phase 1 development complete
- Oct 2002: PV v2.0 status briefed to SMA Directors
- April 2003: PV v2.0 status briefed to SMA Directors
- April 2003: PV v2.0 Pow-wow
- May 2003: Beta Test PV v2.0 at SSC

ARC PV (3)

Mission Success Starts With Safety

NPD 8700.1A Basis for PV

5. RESPONSIBILITY

c. The Associate Administrator for Safety and Mission Assurance shall:

(2) Establish strategies, policies, agreements, and standards for SRM&Q and RM and ensure effective compliance with same. ...

(3) Evaluate the Agency for the existence of effective and and efficient SMA and RM functional management processes for assuring safe and successful NASA programs, projects, and activities. These assurance evaluations include ... (c) conducting periodic SMA process verifications of Centers and Headquarters (for Headquarters, safety only) and tracking recommendations and corrective actions to closure; ...

ARC PV (4)

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PV v2.0 Process

- OSMA, in conjunction with Centers, prepares individualized PV 'roadmaps' to cover targeted SMA requirements and responsibilities.
- Periodically, Centers will be encouraged do a self-assessment using PV 'roadmaps'.
- PVs focus on:
  - Effective/Efficient implementation of SMA Key Processes.
  - Minimizing overlaps with other reviews.
  - Common problems/concerns.
- PV Customers (in order)
  - Center, Enterprise, OSMA
- After PVs, OSMA will analyze results to identify:
  - Best practices, areas for potential improvement, systemic problems, changes to policy documents, ...

ARC PV (5)

Mission Success Starts With Safety

Process Verification Content

ARC PV (6)

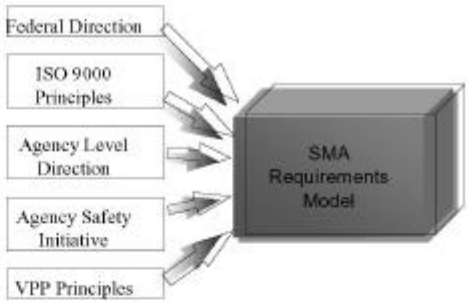
Mission Success Starts With Safety

PV Version 2.0

SMA Requirements Model

Mission Success Starts With Safety

Inputs to the Model – Top Down View



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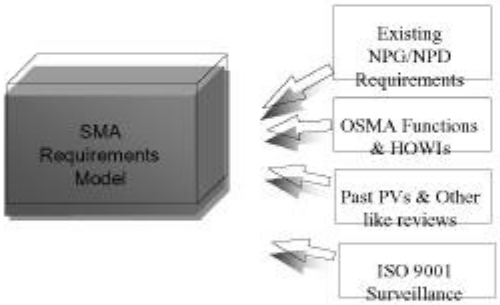
Inputs to the Model – Bottom Up View



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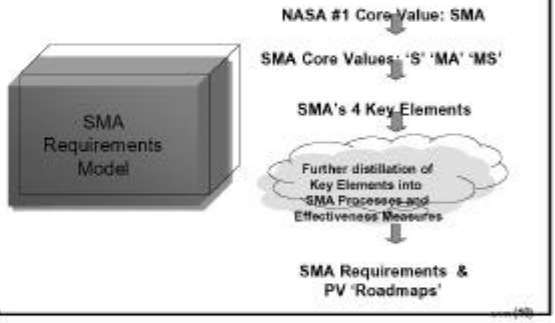
Structure of the Model



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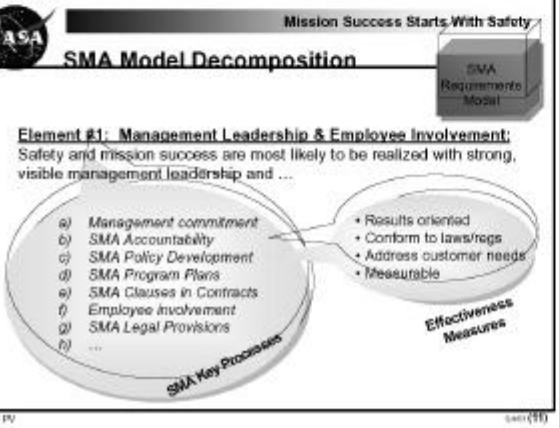
SMA Model Decomposition



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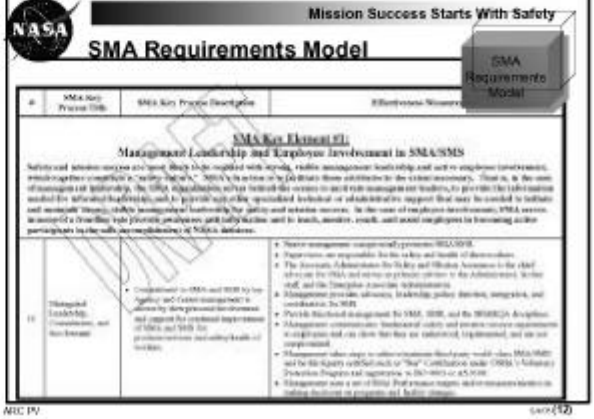
SMA Requirements Model



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Sample Roadmap

ARC PV (13)

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ARC PV

Team and Schedule

ARC PV (14)

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ARC PV Team

Function	Nominal PV	ARC PV Team
Chair	OSMA Division Director (or designee)	Pete Rutledge
Exec Sec	Code QE Center POC	John Lyver
Enterprise	1 member	None
Technical	2-4 SMEs (from HQ & Centers) [should include: Safety, Fire, EPP, System Safety, Health, Risk Management]	Jon Mullin (Emerg Mngmt) Phil Napala (SOFIA SMA, R-BAM) Art Lee (LDE, Facility Safety) Eric Raynor (SMA Mngmt)
Other Center SMA Personnel/ external experts	Next PV Center: 1 or 2 2nd Last PV Center: 1	LaRC/Grant Watson (Mishaps) None

ARC PV (15)

Mission Success Starts With Safety

Nominal Schedule for General PV

- Each SMA Directors' Meeting:
  - Firm up schedule for subsequent 6 months of PVs
  - OSMA and Centers provide/confirm PV POCs to lead planning
  - Technical review of systemic review findings from recent PVs
  - Topics of 'concern' discussed
- AOAs provided per AOA 'HOWI' and NPD 8700.1A
  - Linked to SMA Requirements Model (*future*)
  - Roadmap/Model Element items of interest provided to help build AOA (expanded from current AOA guidance letter)
    - Topics of interest agency-wide (OSMA determined)
    - Topics dealing with new changes/current events
    - Enterprise concern topics

ARC PV (16)

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Pre-PV Schedule

- PV minus 2 months:
  - Letter AA/SMA to Center Director announcing PV
  - PV Plan entered into Database
    - Center provides SMA Requirement Model Sub-elements to PV
    - PV Manager provides Agency/Center topics to PV
    - OSMA Center POC provides topics from 'Center experience'
  - Begin OSMA Center POC and Center 'negotiate' Roadmap Items to PV
  - Begin selection of other roadmap items
- PV minus 1 month:
  - PV Plan 'signed' in database
  - Enterprise briefed on PV, participation requested
  - Schedule firmed and PV team selected
  - Center encouraged to do Self-Assessment on Roadmaps ID'd (keep to self) [Center has opportunity to share] (Database has capability to support/store)
- PV minus 2 weeks:
  - PV Planning frozen
  - OSMA & Center POCs negotiate detailed schedule and set up appointments
  - Center provides any progress updates to provided data

ARC PV (17)

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Nominal Schedule for PV Week

- Monday or Tuesday: In briefing to Center Director and Key Center Personnel
- Monday PM through Thursday COB:
  - Conduct interviews per appointments
  - At COB each day, SMA Director, PV Chair and Team tag-up to discuss progress of reviews, needs for attention and any significant findings
- Friday AM:
  - Complete final appointments/reviews (if needed)
  - Out brief Center Director (*style much like ISO 9000 audit out brief*)
    - Demographics of PV
    - Summary of results
    - Summary of Action Items
    - Follow-up Actions
  - Provide copy of all results to Center SMA Director
  - AA/SMA and Enterprise AA invited to attend via telecon

ARC PV (18)

Mission Success Starts With Safety

Post-PV Schedule

- PV plus 2 to 3 weeks:
  - Center has option to provide comments on PV visit out briefing to HQ
  - HQ OSMA PV Manager to provide Center Director with the cleaned up findings and draft report
    - cc: Center SMA Director and Enterprise PV POC
    - submittal signed/OK'd by PV Chair
- PV plus ~1 month:
  - Center and OSMA to each provide action plan for correction of findings. To be included in Final PV Report.
  - Center to provide comments on DRAFT PV Final Report to HQ OSMA
- PV plus ~1-1/2 months:
  - FINAL PV Report issued to Center Director with an AA/SMA approval
  - Copy provided to Enterprise AA

ARC PV (19)

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Content of Final PV Reports

- 6 sections:
  - PV demographics: who, what, when, which, where, ...
  - PV In-Brief
  - PV Out-Brief
  - PV Roadmap Review Sheets showing identification of:
    - Best Practices (processes identified that should be shared)
    - Observations (positive and negative comments NOT *requiring* corrective action)
    - Findings (items identified which *require* upgrade/correction)
  - Endorsed Center and HQ OSMA Corrective Action Plans
  - Reference materials
- Signed by AA/SMA

ARC PV (20)

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Corrective Action Plans

- Center Directors (with SMA Directors, *et al*) address what/how to be done to correct open action items.
- Due to HQ approx. 1 month after PV.
- HQ OSMA will have a corrective action plan for all HQ OSMA actions.
- Only necessary/sufficient paperwork is desired.
- Transmittal indicating Center Director commitment.
- HQ OSMA will advocate assistance for Center with Enterprise, including funding changes, where necessary, to aid in correction.

  ** If needed, Enterprise IPO involvement will be sought **
- ONLY periodically, Center reports status of corrective actions (this could be by exception; i.e., when milestones are slipped)

ARC PV (21)

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ARC PV

SMA Key Processes to be Reviewed

ARC PV (22)

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SMA Key Processes to be Reviewed From the SMA Requirements Model

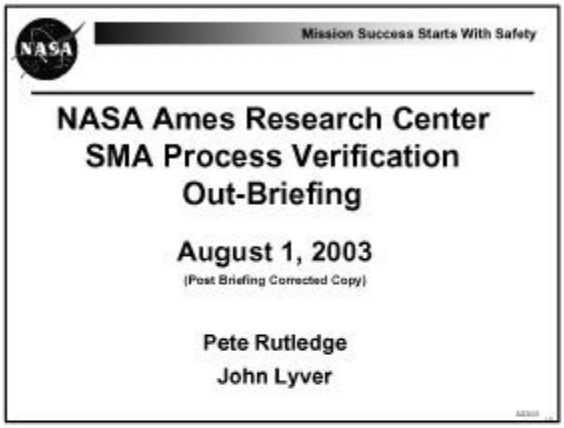
- SMA Key Element #1: Management Leadership and Employee Involvement in SMA/SMS
  - 1A: Managerial Leadership, Commitment, and Involvement
  - 1B: SMA Responsibility, Accountability, Authority, Accountability
  - 1C: SMA Policy Development
  - 1D: SMA Program Plans
  - 1H: SMA Personnel Motivation Systems
  - 1J: SMA Implementation
- Other SMA Key Processes:
  - 2Am: Mishaps (Process Only)
  - 2Ax3: Lifting Device Equipment
  - 2Ax8: Electrical Safety (minor)
  - 2Ba: Product Assurance Goals (SOFIA Project only)
  - 2Bc: Requirements / Product Control (SOFIA Project only)
  - 3Aa: Risk Identification (SOFIA Project only)
  - 3Ab: Risk Mitigation
  - 3Af: GIDEP
  - 3Bb: Fire Protection

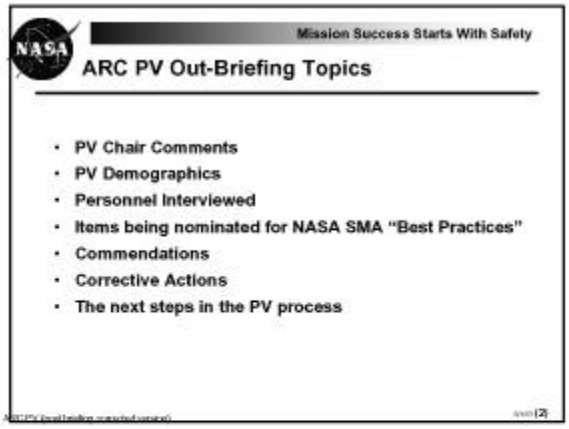
ARC PV (23)

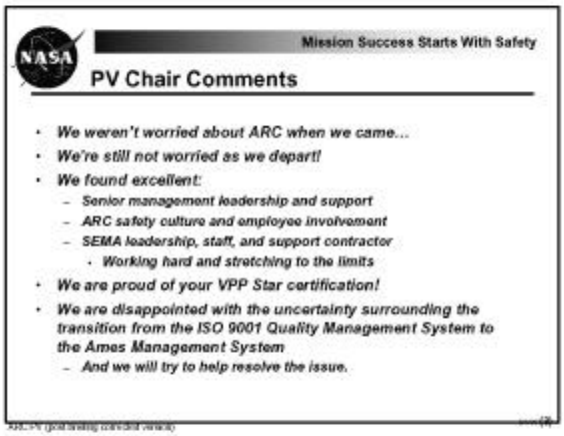
Any Comments?

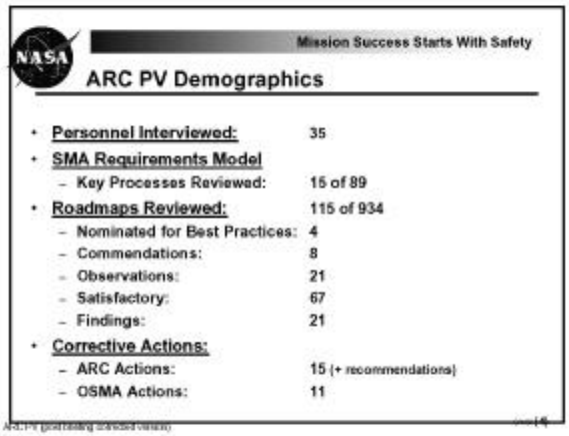
Thank You

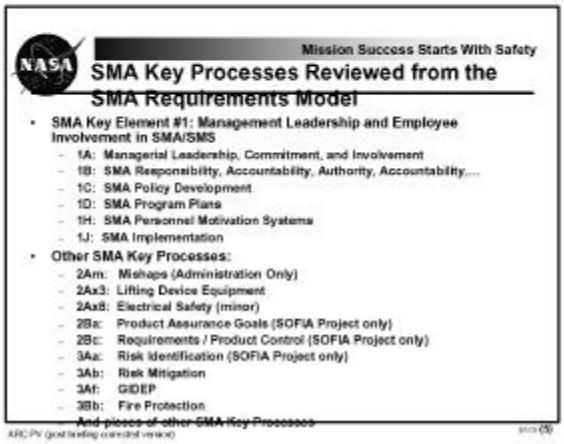
Appendix D: Sample Out-Briefing

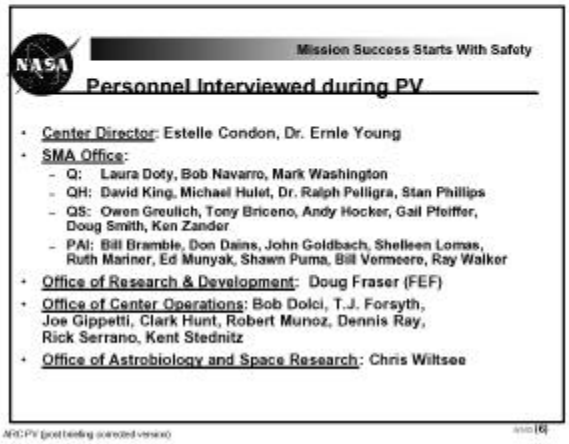


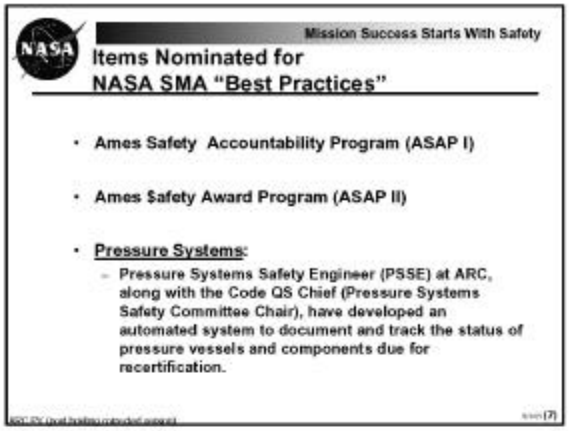


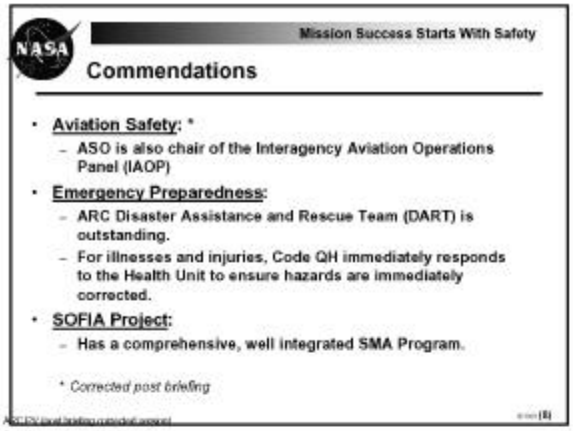


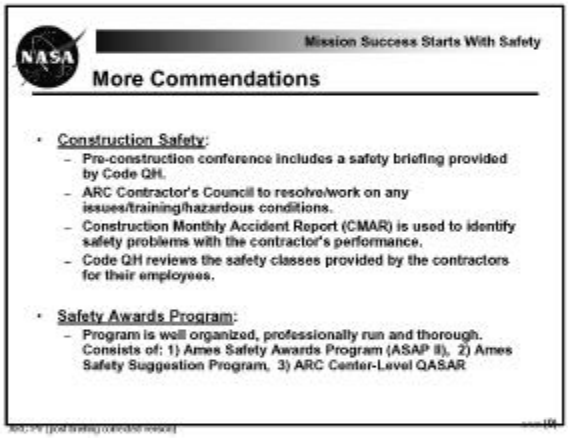


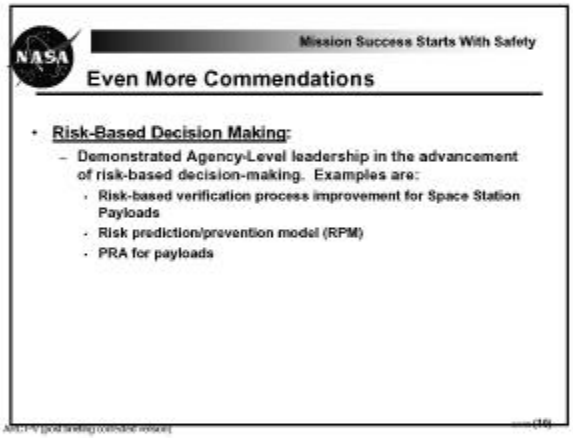


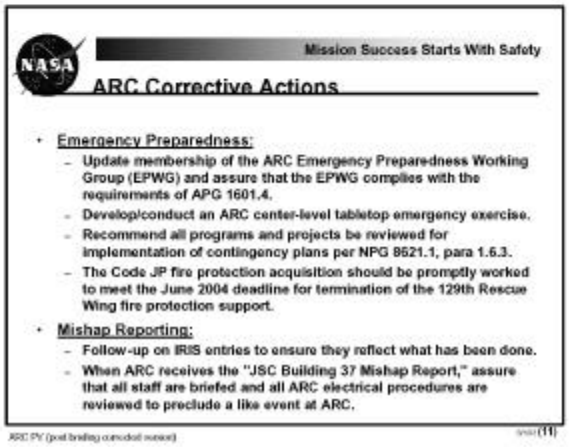


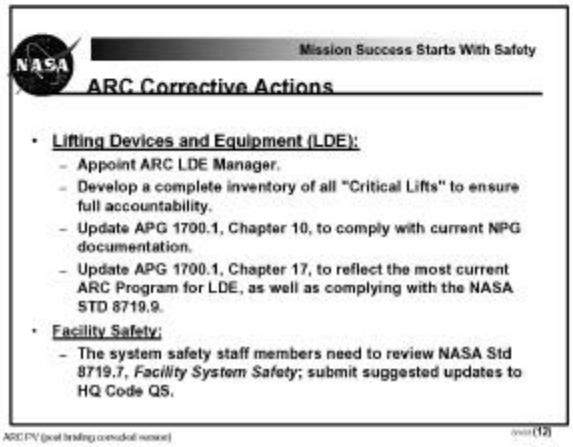

Mission Success Starts With Safety
Items Nominated for
NASA SMA "Best Practices"
• Ames Safety Accountability Program (ASAP I)
• Ames Safety Award Program (ASAP II)
• Pressure Systems:
– Pressure Systems Safety Engineer (PSSE) at ARC, along with the Code QS Chief (Pressure Systems Safety Committee Chair), have developed an automated system to document and track the status of pressure vessels and components due for recertification.
(7)


Mission Success Starts With Safety
Commendations
• Aviation Safety: *
– ASO is also chair of the Interagency Aviation Operations Panel (IAOP)
• Emergency Preparedness:
– ARC Disaster Assistance and Rescue Team (DART) is outstanding.
– For illnesses and injuries, Code QH immediately responds to the Health Unit to ensure hazards are immediately corrected.
• SOFIA Project:
– Has a comprehensive, well integrated SMA Program.
* Corrected post briefing
(8)


Mission Success Starts With Safety
More Commendations
• Construction Safety:
– Pre-construction conference includes a safety briefing provided by Code QH.
– ARC Contractor's Council to resolve/work on any issues/training/hazardous conditions.
– Construction Monthly Accident Report (CMAR) is used to identify safety problems with the contractor's performance.
– Code QH reviews the safety classes provided by the contractors for their employees.
• Safety Awards Program:
– Program is well organized, professionally run and thorough. Consists of: 1) Ames Safety Awards Program (ASAP II), 2) Ames Safety Suggestion Program, 3) ARC Center-Level QASAR
(9)


Mission Success Starts With Safety
Even More Commendations
• Risk-Based Decision Making:
– Demonstrated Agency-Level leadership in the advancement of risk-based decision-making. Examples are:
• Risk-based verification process improvement for Space Station Payloads
• Risk prediction/prevention model (RPM)
• PRA for payloads
(10)


Mission Success Starts With Safety
ARC Corrective Actions
• Emergency Preparedness:
– Update membership of the ARC Emergency Preparedness Working Group (EPWG) and assure that the EPWG complies with the requirements of APG 1601.4.
– Develop/conduct an ARC center-level tabletop emergency exercise.
– Recommend all programs and projects be reviewed for implementation of contingency plans per NPG 8621.1, para 1.6.3.
– The Code JP fire protection acquisition should be promptly worked to meet the June 2004 deadline for termination of the 129th Rescue Wing fire protection support.
• Mishap Reporting:
– Follow-up on IRIS entries to ensure they reflect what has been done.
– When ARC receives the "JSC Building 37 Mishap Report," assure that all staff are briefed and all ARC electrical procedures are reviewed to preclude a like event at ARC.
(11)


Mission Success Starts With Safety
ARC Corrective Actions
• Lifting Devices and Equipment (LDE):
– Appoint ARC LDE Manager.
– Develop a complete inventory of all "Critical Lifts" to ensure full accountability.
– Update APG 1700.1, Chapter 10, to comply with current NPG documentation.
– Update APG 1700.1, Chapter 17, to reflect the most current ARC Program for LDE, as well as complying with the NASA STD 8719.9.
• Facility Safety:
– The system safety staff members need to review NASA Std 8719.7, *Facility System Safety*; submit suggested updates to HQ Code QS.
(12)

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ARC Corrective Actions

- Documentation:
  - Update AMI 8829.1, dated Feb 26, 1999, enclosure 1, para 2, which contains outdated references such as NHB 1700.1 (v9) and NHB 2710.1.
  - Review and assess the various documented ARC processes for approving deviations/waivers to ensure a consistent ARC policy is being followed, as well as complying with NPG 8715.3, Section 1.19, for safety variances.
- Personnel Reliability Program (PRP):
  - Review 14 CFR 1214 and determine if a PRP program is needed.

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HQ OSMA Corrective Actions

- Funding:
  - Investigate Legionella cleanup funding for ARC as promised by Dr. Mulville. Discuss with HQ Codes AD, AM, and J.
  - Investigate with HQ/Codes R and S why the SMA analysis funding was cut for FY-03 for the SOFIA program. Also, investigate the FY-04 SMA analysis funding for SOFIA and ensure that proper funding is authorized.
- SMA Requirements:
  - Complete implementation of requirements prioritization in the SMA Requirements Model.
  - Action item #OSMA-2 from the SSC PV applies (required reports and data sent to HQ/OSMA).
  - To discuss at SMA Directors Meeting for the purpose of finding an Agency solution to Configuration Management problems.
- Mishap Reporting:
  - Encourage all NASA Centers to use mishap data to inform center personnel of mishaps. Several NASA Centers have a weekly safety highlights sheet used for this purpose.

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HQ OSMA Corrective Actions

- Training:
  - Consider the formation of a board of Center SMA training reps to oversee training provided by the NASA Safety Training Center (NSTC) to help ensure that NSTC offerings are meeting Centers' needs.
  - Look into ARC's request to modify SOLAR training certificates.
  - Look into possibility of streamlining the process by which Centers contract with SOLAR to develop new web-based courses.
- Emergency Preparedness:
  - Assist ARC in providing adequate support for fire protection on Moffett Airfield.
- Quality Management System:
  - Facilitate a meeting with HQ Codes AD, JI, and R, to discuss the effects on ARC SMA due to the transition of the ARC Quality Management System to bring about a decision in the near-term.

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ARC PV:

The Next Steps

Mission Success Starts With Safety

Post-PV Schedule

- End of PV:
  - Full set of DRAFT findings left with Center SMA Director
- PV plus 2 to 3 weeks:
  - Center invited to comment on PV visit
  - Center Director provided cleaned up findings and draft report
- PV plus ~1 month:
  - Center and OSMA each provide corrective action plans
  - Center invited to comment on DRAFT PV Final Report
- PV plus ~1-1/2 months:
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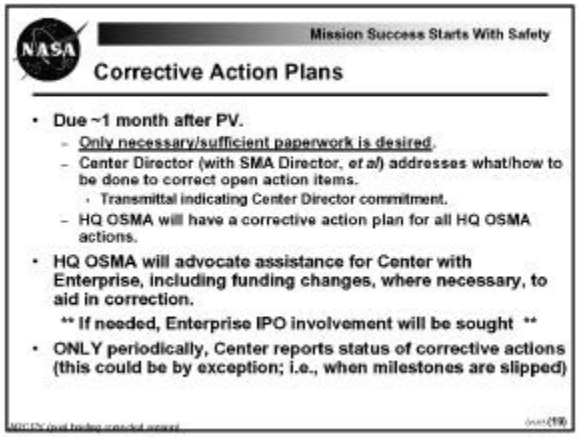

Appendix E: Sample PV Final Report Pages

NASA Ames Research Center
Safety and Mission Assurance
Process Verification Report

Review held: July 28 – August 1, 2003

Report prepared on: August 20, 2003

TABLE OF CONTENTS

ARC PV Team

Chair:	Peter J. Rutledge, Ph.D.	NASA HQ/QV
Executive Secretary:	John W. Lyver, IV, C.S.P.	NASA HQ/QV
QE Center Point of Contact:	Faith Chandler (HQ support only)	NASA HQ/QE
Members:	Arthur Lee	NASA HQ/QV
	Jonathan Mullin	NASA HQ/QS
	Philip Napala	NASA HQ/QE
	Eric Raynor	NASA HQ/QS
	Grant Watson	NASA LaRC/SMA
Observers:	Trevor Cole	HGL, Inc.
NASA HQ Outbrief Participants:	Bryan O'Connor	NASA HQ/Q
	James D. Lloyd	NASA HQ/Q
	Wilson Harkins	NASA HQ/QS
	Robert E. Anderson	NASA HQ/R

PV Schedule

In-briefing:	Tuesday, July 29, 2003
Reviews:	Monday through Friday
Out Briefing:	Friday, August 1, 2003